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STAFF STUDY

Improved Machine Control of Information

PROBLEM

1. To eliminate through the adaptation of electronic devices the limitations hitherto imposed on information control and retrieval by conventional methods as alphabetized indexing, pigeon-hole classification and subject heading filing.

DISCUSSION

2. Ready access to a wide range of information is a prerequisite to the production of intelligence. Success in any specific intelligence assignment requires a selective operation to make pertinent documents and papers, or extracts of these, available to the analyst. Unless the selecting is performed with a high degree of discrimination, the analyst wastes much time in reviewing matter extraneous to his assignment or he will be denied the opportunity to consider all relevant facts.

3. To perform this critical selective operation is no simple task. Existing facilities are grossly inadequate, in all fairness however, because of the limitations imposed by the electro-mechanical machines which have hitherto been available.

4. Known advances in electronic technology make possible the virtual removal of these limitations. At a small fraction of the cost of a general-purpose electronic computer, it is possible to construct a device capable of performing essentially unlimited correlations between personalities, institutes, specific subject areas and prescribed action concepts. These devices, of which the searching-selector of the Minacard System is an example, can by application to wide areas of information processing enhance unbelievably the degree of specificity with which information can be retrieved against complex search requirements. And this can take place relatively immediately at nominal expense and effort. Later special-purpose computers handling information in digital form will no doubt replace such devices in part.

5. Prior research sponsored by the Agency, at the instigation of OSI, and related research carried on within the Office has gone far to elucidate expanded concepts of processing, indexing and classification which must be developed and utilized in order to take full advantage of the potentialities of the logical electronic circuits in such devices. This research has given insight into the intriguing possibilities of establishing and monitoring by machine obscure correlations of bits of information, the relationship of which was not apparent, in fact, often not perceivable, when the information was processed into the

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system. Finally, application would provide an adequate and effective subject control of the Soviet scientific and technical literature, which can not be achieved by any other practical means.

CONCLUSIONS

6. a. A further limited research effort should be undertaken at once in the nature of a pilot plant operation on a segment of intelligence documents that will apply the expanded concepts of classifying, coding, and indexing that modern electronic searching machines are capable of handling.

b. Such research would provide the factual data that must be at hand before policy decisions can possibly be made as to the feasibility and desirability of operational adoption.

c. The effort should be directed primarily at the practical and intellectual problem of determining the degree of specificity which should pertain in the processing of information for subsequent machine searching. It would likewise measure the improvement that would result in the pertinency of information recovered by machine searching in response to detailed search requirements, and clearly define the operations involved in processing and retrieval.

d. Whereas this recommended phase of work need not extend the specific coding methodology developed in prior research, it is virtually certain that the desired factual material can be obtained more readily and quickly by so doing.

e. Concurrently, bibliographic information (possibly augmented by selected percepts from available abstracts) for the bulk of Soviet scientific and technical literature should be processed into a form suitable for electronic scanning and selection as pertinent to search requirements involving specific subjects, authors, institutes-of-origin and journal contents.

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21 February 1957